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BOOK REVIEWS AND NOTES.

THE DISTRIBUTION OF ATTENTION. By *E. Neil McQueen*. *The British Journal of Psychology*, Monograph Supplements, No. 5. Cambridge University Press. Pp. 142. Price 5s. net.

This monograph is a thesis approved for the degree of doctor of science in the University of London, and in it the author sets out to discover whether there is any general power of distributing the attention. In dealing with the study of individual differences, a considerable number of psychological writers have assumed that individual minds may be classified according to types (phlegmatic or choleric, sensorial or muscular in reaction, etc.), the implication being that a given mind has a power of functioning in a constant fashion, without reference to the character of the particular task performed. But this opinion is dying out, and the psychologists are increasingly inclining to the view that the individual's reaction varies in nature according to the type of performance. It is the author's purpose in this monograph to dispose of the assumption in question with reference to the topic of the distribution of attention, and by the citation of experiments of his own, to prove that the distribution of attention in the case of any particular person is a variable factor and that consequently there is no general "span" of attention.

The author begins with a critical review of previous work, making mention of tachiscopic experiments intended to measure the range of visual attention and other experiments in the field of successive auditory impressions. Reference is made to an interesting experiment by Binet in which the latter instructed his subjects to press a rubber tube according to a certain rhythm which they were to endeavor to maintain while doing something else, as for example, reading aloud, or calculating mentally; Binet believes that the number of impressions which an individual can perform on the tube while doing the other mental work will give some indication of the range of his field of consciousness. The author brings the following criticism to bear on the reasoning usually applied to this kind of experiment. First, that no method is indicated of measuring the two processes simultaneously performed, so that it is impossible to compare the span of the individual who, while recording correctly six impressions on the tube, yet takes ten seconds to perform an addition and then gets it wrong, with that of an individual who performs the addition correctly in five seconds but fails to record correctly more than two impressions on the tube. And, secondly, that no measurement is made of the individual's ability

to perform singly each of the two processes performed simultaneously during the experiment, whereas it is clear that an individual who excels in either performance done alone will also do well in the performance when done simultaneously with another. Thus, the experiments are criticised by the author as inconclusive, because they have not been carried out so as to exclude alien factors or in a way to secure precise measurement of results.

The author then relates his own experiments carried out, as he says, to obtain a measure of the ability of the subject for the "undistributed" performances (i. e., of the performances carried on singly), to eliminate the effect of these differences of ability in the undistributed performances, and to see if any evidence were forthcoming of the existence of any general factor of distribution of the attention common to all the "distributed" performances.

In the process of the experiment, the subjects perform a certain pair of tasks, both singly and simultaneously, and in each case their efficiency is measured and recorded respectively; they perform not one pair merely but a number of different pairs of tasks (tapping and adding, card-sorting and counting by 3s, etc.). With these results, the investigator was able to calculate the ability of the subject for the undistributed as well as for the double performance in each case, and, finding that there is an appreciable correlation between the undistributed performances, reasoned—correctly—that the factor which produced this correlation would operate to produce a high correlation between the corresponding distributed performances. But, he argued, if there is a general power of distribution, there must be a further factor owing to the operation of which, the correlation between the distributed performances should be higher than that between the undistributed performances.

Testing this deduction from the hypothesis of a general power of distributing the attention, with the experimental results, the author discovered that the averages for the intercorrelations of the distributed and undistributed performances were nearly equal and hence concluded that there is no evidence of a general power of distribution. From other experiments, which consisted in letting the subject perform repeatedly tasks of the same sort but with varying speed, the author ascertained that the distribution of attention varied as the speed varied, a fact supporting the view of the specific nature of the factors involved in any distribution of the attention.

In succeeding chapters the author deals with a variety of possible deductions from the results of his experimental researches and concludes by considering the vexed question whether it is possible to attend to more than one thing at a time independently. One must remember that what appears as a plurality of objects in practice, may be psychologically a single object; other alternatives in the case of the performance of two tasks simultaneously are an alternation of the attention from the one to the other, an automatization of one of the processes and its consequent relegation to the field of consciousness, and simultaneous attention to the two tasks, both being present independently in the field of attention. Introspective evidence obtained under experimental conditions is brought forward in proof of the occurrence of all these possibilities, including the last. It is rather difficult to understand how one should be able to attend simultaneously to two tasks as separate, but the author takes the sting out of his conclusion by admitting that the conscious effort, at any rate, is directed to only one of the tasks.

It has been possible to give only a brief and very inadequate summary of Mr. McQueen's account of his own experimental researches and of his criticisms of the work of others in the same field. The investigation is strictly scientific and experimental, and the author proves himself resourceful in devising experiments calculated to yield precise results. The exposition is as clear as the subject will allow, and the whole account evidences a happy combination of the empirical-experimental habit of mind with the ability for coherent thinking. The results of Mr. McQueen's investigations should inflict one more blow upon the fast crumbling structure of the old superstition which regards the mind as a substance endowed with general powers as such, instead of as a thing analogous to an organism, whose action is a function in each case of the particular situation in which it finds itself. Δ

HERBERT SPENCER. By *Hugh Elliot*. "Makers of the Nineteenth Century" series, edited by *Basil Williams*. London: Constable and Co., Ltd., 1917. Pp. x, 330. Price, 6s. net.

This volume is a well and clearly written account of all that is of any importance in the life and work of Herbert Spencer (1820-1902). Mr. Elliot is by no means thoroughly in sympathy with either the character or the doctrines of that singularly estimable and unattractive man, who was always admirable except when lack of humor made him ridiculous; although it would seem that at first Mr. Elliot was a very ardent admirer of Spencer's writings. It was certainly much the best plan to give, as Mr. Elliot has given, by far the larger part of the book to a description of the writings of Spencer, which are very numerous for one who was "by nature an exceedingly idle man" (p. 61). Mr. Elliot's opinion is that the main interest of Spencer's works at the present time is on the social side. "His scientific and evolutionary writings have already become part of the 'atmosphere' of modern thought, in the sense that they scarcely need to be taught, but constitute the foundation upon which more recent ideas are built. But his social writings have not in the same way become axiomatic..." (p. 2).

There are two fundamental ideas at the root of Spencer's philosophy. The first is that of universal evolution. Early in life Spencer "endeavored to find some law which should describe the tendencies of the constant state of change in Nature,—a law which should be equally applicable to the change of a nebula into a star or stellar system, and of a protozoan animal into a man. This law he called the Law of Evolution. It proposed to describe the various stages characteristic of all progress in all departments of Nature as the universe grows older. He believed that the outlines of such changes were similar throughout all varieties of the changing substance" (p. 79). The second fundamental idea is the guiding principle of his social and political writings, and is that social progress consists in "the admission of every individual to the *maximum* freedom consistent with social order and security" (p. 80).

In the statement of the principles of his philosophy Spencer was very prone to those sonorous definitions which seem to impress some people as evidences of great power and profundity. With their help Spencer brought about an apparent transformation of sciences into a form in which practically everything that seemed, to those people who combine interest in science with